

THE CORRECT NAME FOR THE PALEARCTIC BROWN, OR FLAT-SKULLED, SHREW IS *SOREX ROBORATUS*

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Abstract.—Examination of the holotypes of *Sorex roboratus* Hollister, 1913, and *Sorex vir* Allen, 1914, and comparisons with series of other Palearctic species of *Sorex* reveals that *S. roboratus* is the oldest valid name for this taxon, and that *S. vir* must be regarded as a junior synonym for the species. Geographic variation in *Sorex roboratus* is reviewed, and a new taxonomic arrangement proposed.

During the period of indiscriminate taxonomic "lumping," the number of species of *Sorex* recognized in the fauna of the Soviet Union was reduced to six (Bobrinskii *et al.* 1944) or seven (Ellermann and Morrison-Scott 1951). Several taxa considered subspecies of *Sorex araneus* by these workers were revealed by subsequent investigations to be independent species—*S. asper*, *S. caucasicus*, *S. daphaenodon*, *S. isodon*, *S. raddei*, *S. arcticus* (=*S. tundrensis*, Junge *et al.* 1983), *S. unguiculatus*, and a species usually called *S. vir* (Stroganov 1957, Dolgov 1967, Corbet 1978). However, Yudin (1971, and references cited therein) maintained that the correct name for this latter species was *S. roboratus*. Neither he nor Dolgov were able to examine the holotypes of these two taxa, which are housed in the Museum of Comparative Zoology of Harvard University and the National Museum of Natural History, Washington, D.C., respectively, and which are crucial to the question.

I have examined both holotypes, compared them with relevant material of other Palearctic *Sorex* (20 nominal taxa, 274 individuals including 14 other holotypes; see "Specimens Examined") and conclude that Yudin's view, that *S. roboratus* is the oldest valid name for this species, is correct, for the reasons given below. Three external measurements were taken from collector's labels. Seven cranial measurements were made to the nearest 0.1 mm with dial calipers. These include: 1) condyloincisive length (CIL): occipital condyles to anterior tips of first incisors; 2) cranial breadth (CB): greatest breadth of braincase, approximately across the mastoids; 3) maxillary breadth (MB): greatest distance between tips of maxillary processes; 4) M₂ to M₂ breadth (M₂-M₂): greatest distance between anterior labial margins of second upper molars; 5) interorbital breadth (IOB): least lateral diameter of skull at anterior end of orbits, just posterior to maxillary process; 6) palatoincisive length (PIL): posterior margin of palate in midline to anterior tips of first incisors; 7) upper tooth row length (UTRL): greatest length of tooth row from posterior margin of alveolus of M₃ to anterior tip of I₁. These measurements were selected for the speed and accuracy with which they could be made, and some differ from those of earlier investigators. For example, condylobasal length is a traditional measure of skull length, but it is usually difficult and time-consuming to measure the anterior margin of the premaxillary bone.

Employing the anterior tips of the first incisors for the anterior terminator results in a more accurate and repeatable measurement among specimens of comparable incisor wear and rotation. Individual specimens classed as overwintered adults were excluded from comparisons, because of the amount of incisor wear and rotation.

Sorex roboratus Hollister, 1913

Hollister (1913a) based this name on a specimen from 5 mi S Dapucha (=Ta-pucha), Altai Mountains, Gorno-Altaisk Autonomous Oblast, R.S.F.S.R., U.S.S.R. This locality was not located on maps, but Hollister (1913b) described it as about 125 miles southeast of Biisk, along the "post road" (Chuiskii Trakt) that follows the valley of the Katun and Chuya rivers. This would place Tapucha (Fig. 1) somewhere between the present towns of Shebalino and Tukta, probably near Seminskii Pass. The holotype is a skin and badly broken skull, a male with unworn teeth, trapped by Hollister (orig. no. 4451), 7 August 1912, in a dense *Pinus cembra* forest, and represents one of ten *Sorex* captured by Hollister from two locations in the Altai Mountains. Hollister (1913a) believed that the nine specimens other than the holotype of *S. roboratus* were assignable to *S. araneus borealis*. Stroganov (1957) has shown, however, that the name *S. borealis* should be restricted to those populations of *S. "arcticus"* (i.e., *S. tundrensis*) inhabiting the tundra and northern taiga zone from the Yenesei River to Chukotka (see map, Fig. 2, in Junge *et al.* 1983), thus throwing into question the identity of Hollister's shrews; moreover, Stroganov (1957) placed *S. roboratus* as a subspecies of *S. araneus*.

Dolgov followed Stroganov in regarding *S. roboratus* as a synonym of *S. araneus*. However, Dolgov (1964, 1966, 1967) and Yudin and others (1967, 1979) recognized that four medium to large species of *Sorex* were geographically sympatric in the Altai Mountains—*S. araneus*, *S. arcticus* (=*tundrensis*), *S. isodon*, and the largest species, which they named *S. roboratus* or *S. vir*, respectively. I have re-examined nine of the ten *Sorex* referred to by Hollister, and find that they represent three species rather than two as he thought. Six from Tchegan-Burgazi (=Chagan-Burgazy) Pass are all *Sorex tundrensis*, probably *S. t. schnitnikovi* (Junge *et al.* 1983). From Tapucha, in addition to the holotype of *S. roboratus*, there are two specimens of *S. araneus*.

Sorex vir G. Allen, 1914

This name is based on a specimen captured by J. Koren at Nizhni Kolymsk, Yakutsk A.S.S.R., R.S.F.S.R., U.S.S.R. (Fig. 1). It was part of a large series of skins and skulls of this species taken during the fall-winter of 1911, and now for the most part preserved at the Museum of Comparative Zoology. Koren also obtained several other species of *Sorex* at that time, including *S. tundrensis borealis* (incl. *S. t. ultimus*), *S. daphaenodon sanguinidens*, and *S. caecutiens korenii*. In contrast to *S. roboratus*, *S. vir* has been regarded as polytypic. Its distribution is eastern Palearctic—*S. v. vir* occurring from the lower Ob River to Chukotka; *S. v. thomasi* in Transbaikalia, and *S. v. platycranius* in a restricted range in the Ussuri and Amur river regions of the Soviet Far East (Fig. 1). Like *S. roboratus* in the Altai, *S. vir* is the largest of the sympatric *Sorex* that co-occur



Fig. 1. Map of Siberia and adjacent Mongolia, showing type localities of *Sorex roboratus*, and collecting localities for some samples used in this study. Open symbols: type localities; solid symbols, other specimens examined. Triangles, *S. roboratus*; circles, *S. araneus*; squares, *S. tundrensis*. Dotted line, eastern and southern range boundary of *S. araneus*; dashed line, western and southern range boundary of *S. tundrensis*; dash-and-dotted line, western and southern range boundary of *S. roboratus*.

in eastern Siberia (except in the Ussuri region, where the even larger *S. mirabilis* is found).

Comparisons

The basic question to be answered is: to which species of shrew should the holotype of *S. roboratus* be assigned? Cranial and external measurements are presented for selected specimens in Table 1. In most cranial dimensions, both *S. roboratus* and *S. vir* are larger than shrews of the *S. araneus* and *S. tundrensis* populations with which they occur. Where *S. araneus* and *S. tundrensis* occur together in the Altai, the former species is larger in most dimensions. However, *S. araneus* exhibits some size variation, being nearly as large as *S. roboratus* at Kebezen' but only a little larger than *S. tundrensis* at Tapucha (Fig. 1). Specimens from Barnaul and Toguchin are intermediate in size.

Fortunately, other characters help to separate the four nominal species. Pelage colors differ, both in summer and winter, in that in *S. roboratus* and *S. vir* the back and sides are the same color, whereas in *S. araneus* and *S. tundrensis* the sides are lighter than the back. This contrasting "side stripe" is most prominent in adult *S. tundrensis* in winter pelage. The side stripe in adult *S. araneus* in winter pelage is more buff and contrasts less, while in neither species does it contrast as strongly with dorsal color in summer pelage. In juveniles of both *S. araneus* and *S. tundrensis* the side stripe is usually faint.

Table 1.—External and cranial dimensions of Siberian *Sorex*.

	Head-body	Tail	Hind foot	CTL	CB	MB	M ² -M ²	IOB	PIL	UTRL
<i>Sorex roboratus roboratus</i> , Gorno-Altaisk, Aut. Obl., Tapucha'										
Holotype	71	41	15	22.0	9.8	—	5.5	—	—	9.3
\bar{x}	79.0	41.2	13.3	21.8	9.7	5.8	5.2	3.6	9.8	9.3
\pm SE m	2.1	.43	.38	.057	.101	.025	.020	.019	.039	.035
Range	76-83	40.5-42	12.7-14	21.4-22.5	9.4-10.3	5.6-6.0	5.1-5.5	3.4-3.8	9.3-10.1	8.9-9.6
n	3	3	3	30	30	30	30	30	30	30
<i>Sorex roboratus roboratus</i> , Novosibirsk Obl.										
Holotype	71	43	13	21.9	9.9	5.7	5.1	3.7	9.8	9.35
\bar{x}	71.5	37	14.6	20.9	9.4	5.8	5.2	3.9	9.0	8.6
\pm SE m	71.0	36.4	14.7	20.9	9.5	5.7	5.1	3.8	9.0	8.6
Range	58-87	31-43	.13	.075	.044	.032	.027	.031	.043	.046
n	48	47	48	20	20	18	18	18	20	18
<i>Sorex roboratus thomasi</i> , Irkutsk. Obl., Mongolia										
Holotype	65.1	35.6	12.9	20.6	9.2	5.4	4.9	3.6	8.9	8.7
\bar{x}	65.1	.81	.196	.144	.108	—	—	—	.052	.063
\pm SE m	1.13	.81	11-14	20.0-21.1	8.9-9.7	5.3-5.4	4.8-5.0	3.5-3.6	8.8-9.0	8.5-8.9
Range	58-73	30-41	19	7	7	2	2	2	4	7
n	19	19	19	7	7	2	2	2	4	7
<i>Sorex roboratus platycramius</i> , Khabarovsk. Krai										
Holotype	75	35	15	21.1	9.2	5.8	—	—	9.4	9.1
\bar{x}	80	40	15	21.5	9.1	5.5	—	—	9.4	9.1
<i>Sorex araneus araneus</i> , Gorno-Altaisk, Aut. Obl., Kebezen'										
Holotype	77.9	44.2	12.9	20.9	9.9	5.5	5.1	3.8	9.5	9.1
\bar{x}	77.9	42.4	.155	.064	.038	.033	.023	.023	.043	.039
\pm SE m	3.83	1.62	12.5-13.2	20.0-21.6	9.6-10.4	5.0-5.9	4.9-5.3	3.6-4.0	8.9-9.9	8.6-9.5
Range	67-83.5	42-49	4	4	27	27	28	28	28	28
n	4	4	4	4	30	30	30	30	30	30

Table 1.—Continued.

	Head-body	Tail	Hind foot	CIL	CB	MB	M ² -M ²	IOB	PIL	UTRL
<i>Sorex araneus araneus</i> , Gorno-Altaisk. Aut. Obl., Tapuchka										
64	37	12	18.7	9.3	5.0	4.5	3.3	8.2	8.1	
62	39	12	18.9	9.4	5.0	4.6	3.4	8.3	7.9	
<i>Sorex araneus araneus</i> , Altaisk. Krai, vic. Barnaul; Novosibirsk Obl.										
\bar{x}	79.9	45.7	12.7	20.2	9.8	5.6	5.1	3.9	9.2	8.8
$\pm SE$ m	1.90	1.09	.11	.199	.089	.029	.044	.044	.017	.087
Range	74-85.5	42-48.5	12.5-13	19.5-20.7	9.6-10.1	5.5-5.6	5.0-5.2	3.8-4.0	9.1-9.2	8.6-9.1
n	5	5	5	5	3	3	3	3	3	3
<i>Sorex tundrensis schnittnikovi</i> , Gorno-Altaisk. Aut. Obl., Chagan-Burgazi Pass										
\bar{x}	64.3	35.5	12.2	18.1	9.0	4.8	4.5	3.4	7.7	7.5
$\pm SE$ m	1.15	1.38	.17	.232	.092	.085	.031	.047	.117	.137
Range	61-67	31-40	11-12.5	17.6-18.5	8.9-9.3	4.6-5.0	4.4-4.6	3.3-3.5	7.5-7.9	7.2-7.8
n	6	6	6	4	4	4	4	4	4	4
<i>Sorex tundrensis</i> ssp. Novosibirsk., Irkutsk. Obl.; Mongolia										
\bar{m}	59.8	34.0	11.7	17.6	8.6	5.0	4.5	3.3	7.8	7.3
$\pm SE$ m	1.78	.097	.28	.458	—	.176	.142	.120	.138	.232
Range	55-65	30-37	11-12.5	17.0-18.5	8.2-9.0	4.8-5.4	4.4-4.8	3.1-3.5	7.1-8.3	7.0-7.8
n	6	6	6	3	2	3	3	3	9	3

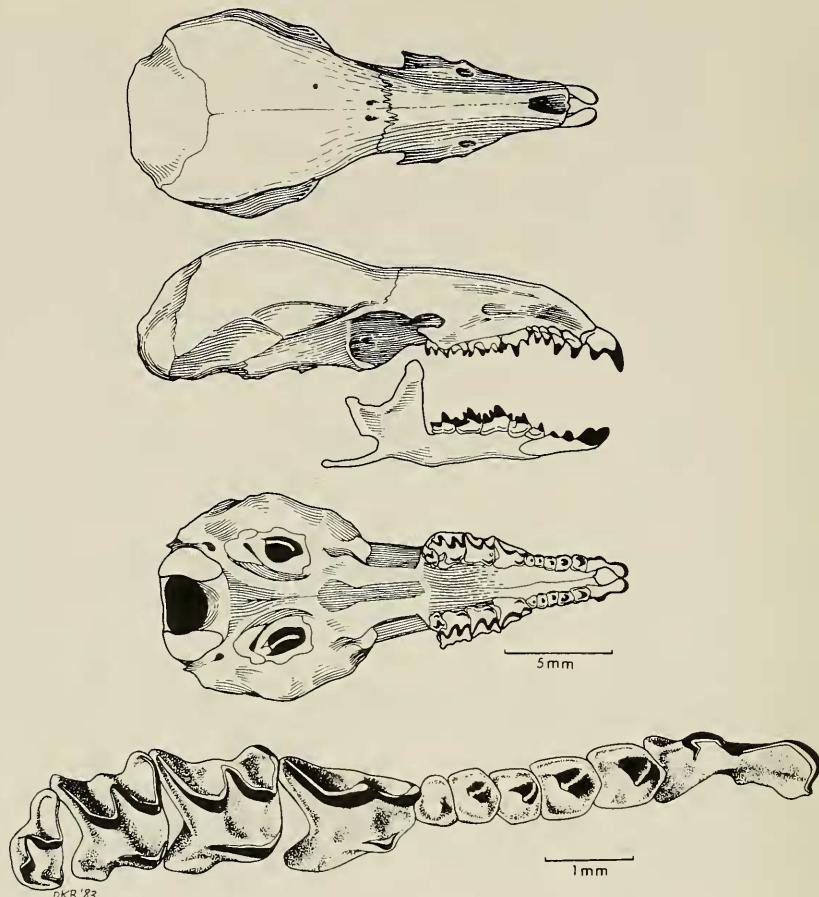


Fig. 2. Skull of *Sorex roboratus roboratus*, juvenile, from Mirnyi, Toguchinsk. rai., Novosibirsk. Obl., U.S.S.R. (UMZ 13005). Dorsal, lateral, and ventral views; enlarged occlusal view of upper tooth row.

Qualitative dental characters also distinguish the taxa. In both *S. roboratus* and *S. vir* in lateral view the anterior pair of maxillary unicuspids (1, 2) are large and subequal, and the next two (3, 4) are markedly smaller and again subequal although the posterior unicuspids of each pair (2, 4) is usually smaller than the anterior (1, 3) (Fig. 2). In *S. araneus* and *S. tundrensis* the first two unicuspids are also large and subequal, but the unicuspids series tends to decrease in size more gradually from unicuspids 2 through 4 (Figs. 3, 4). However, the toothrow in *S. tundrensis* appears more crowded than that of *S. araneus*, and the unicuspids are quadrate in shape, to wider than long (Fig. 4), whereas in *S. araneus* the toothrow is less crowded, and the unicuspids are usually longer than wide (Fig. 3) (Junge and Hoffmann 1982; Junge *et al.* 1983).

The holotypes of *S. roboratus* and *S. vir* are also characterized by the posterior margins of the maxillary molariform teeth, particularly P4 and M2, being deeply excavated (Fig. 2) (Corbet 1978). In contrast, the posterior margins of the upper

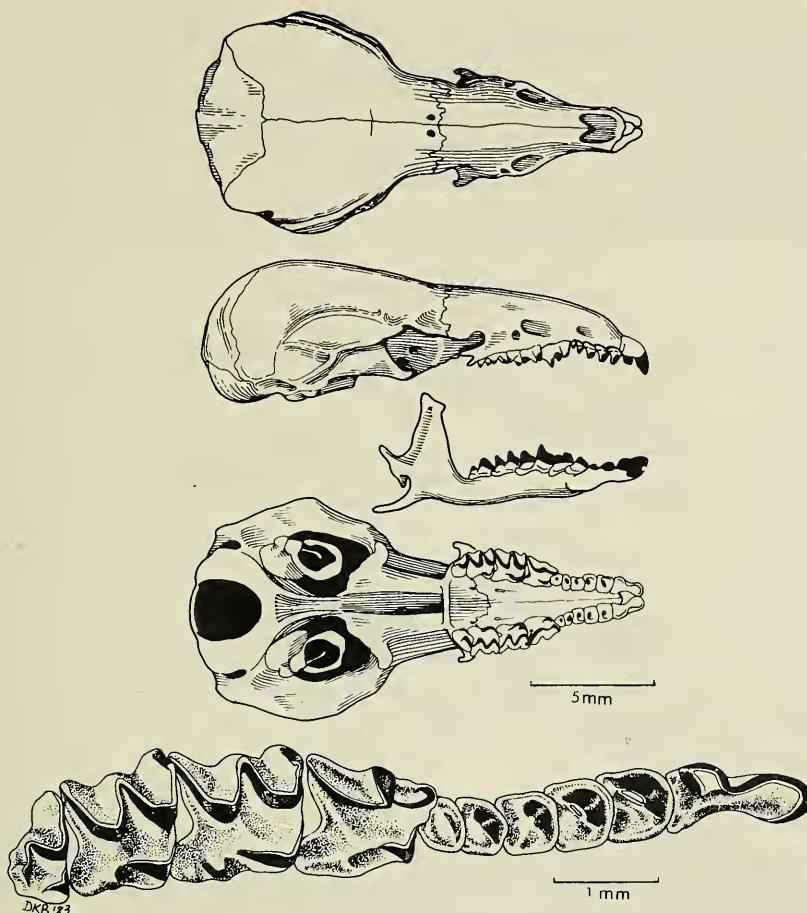


Fig. 3. Skull of *Sorex araneus araneus*, juvenile, from Tapucha, Gorno-Altaisk. Aut. Obl., U.S.S.R. (USNM 175438). Dorsal, lateral, and ventral views; enlarged occlusal view of upper tooth row.

molariform teeth of *S. araneus* and *S. tundrensis* are only moderately excavated (Figs. 3, 4). In *S. roboratus* and *S. vir* P4 is also relatively longer and narrower than in the other two species. Thus, the holotype of *S. roboratus* shares cranial and external characters with *S. vir*, including the holotype, that distinguish it from both *S. araneus* and *S. tundrensis* with which it is sympatric in the Altai Mountains. *Sorex roboratus* is not assignable to any other species of *Sorex* in the Altai (*S. isodon* is smaller, with gradually decreasing unicuspids size and narrow rostrum; *S. caecutiens*, *S. minutus* and *S. minutissimus* are much smaller). Thus, *S. roboratus* and *S. vir* should be regarded as conspecific, and the former name has priority.

Sorex roboratus varies geographically in size and relative proportions. *Sorex r. roboratus* from the Altai Mountains and the surrounding region is the largest, with a broader, more massive skull. The holotype of *S. araneus tomensis* Ognev, 1921, formerly assigned to *S. araneus*, belongs to this large subspecies, and must be considered a junior synonym of *S. r. roboratus*. *Sorex roboratus vir* is smaller,

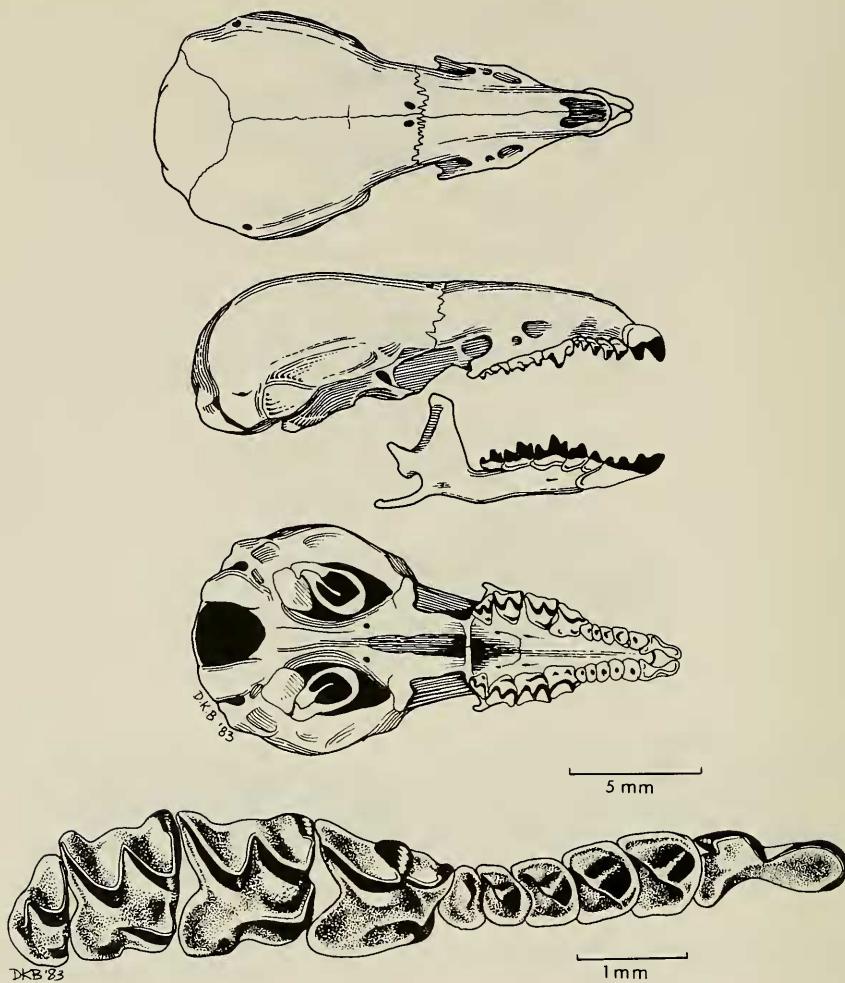


Fig. 4. Skull of *Sorex tundrensis schnitnikovi*, juvenile, from Chagan-Burgazy Pass, Gorno-Altaisk. Aut. Obl., U.S.S.R. (USNM 175430). Dorsal, lateral, and ventral views; enlarged occlusal view of upper tooth row.

with a generally narrower, less massive skull but with wider interorbital region; the tail is also much shorter. *Sorex vir jacutensis* Dukelski, 1928, (originally described as a subspecies of *S. araneus*), which was recognized as a subspecies by Stroganov (1957), is similar in size and proportions to *S. r. vir*, and I regard it, as well as *S. vir turuchanensis* Naumov, 1931, and *S. dukelskiae* Ognev, 1933, to be junior synonyms of *S. r. vir*. This subspecies inhabits central and eastern Siberia from the Sayan Mountains to Lake Baikal on the south, and from the Ob River to Chukotka on the north. The last two subspecies I recognize have more limited ranges. *Sorex roboratus thomasi* inhabits Transbaikaliya, and is the smallest geographic race, being only slightly larger than sympatric populations of *S. tundrensis*, though easily distinguished by cranial morphology (see above). *Sorex macropygmaeus araneoides* Ognev, 1921, has been considered a junior synonym

of *S. araneus* (Bobrinskii *et al.* 1944) or *S. c. caecutiens* (Stroganov 1957; Corbet 1978), but examination of the holotype reveals that it is virtually identical with the holotype of *S. r. thomasi*. Both were taken near Barguzin, share the diagnostic cranial features of *S. roboratus*, and are larger than sympatric *S. tundrensis* and *S. caecutiens*. The range of *S. r. platycranius* adjoins that of *S. r. thomasi* along the Amur River and extends to the Primorskii Krai. This subspecies is larger than *S. r. thomasi*, being about the size of *S. r. vir*, but it has a relatively longer tail and rostrum; it is known from only a few specimens.

Taxonomic Conclusions

The correct names and synonyms for the subspecies and other nominal taxa of *Sorex roboratus* are summarized below:

Sorex roboratus roboratus Hollister, 1913. Type locality, Tapucha, Gorno-Altaisk Autonomous Oblast, R.S.F.S.R., U.S.S.R.

S. araneus tomensis Ognev, 1921. Type locality, vic. Barnaul, Altaisk. Krai, R.S.F.S.R., U.S.S.R.

Sorex roboratus vir Allen, 1914. Type locality, Nizhni Kolymsk, Yakutsk. A.S.S.R., R.S.F.S.R., U.S.S.R.

S. araneus jacutensis Dukelski (=Dukel'skaya) 1928. Type locality, Suntar, Yakutsk. A.S.S.R., R.S.F.S.R., U.S.S.R.

S. vir turuchanensis Naumov, 1931. Type locality, Artyugin River, tributary of Yenesei River, Turukhansk. rai., Krasnoyarsk. Krai, R.S.F.S.R., U.S.S.R.

S. dukelskiae Ognev, 1933. Type locality, Yanov Stan, on Turukhana River, Krasnoyarsk. Krai, R.S.F.S.R., U.S.S.R.

Sorex roboratus thomasi Ognev, 1921. Type locality, Budarman River, tributary of Sosnovka River, vic. Barguzin, Buryat-Mongolsk. A.S.S.R., R.S.F.S.R., U.S.S.R.

S. aranoides Ognev, 1921. Type locality, Sosnovka River valley, near Barguzin, Buryat-Mongolsk. A.S.S.R., R.S.F.S.R., U.S.S.R.

Sorex roboratus platycranius Ognev, 1921. Type locality, vic. Voroshilov, Primorsk. Krai, R.S.F.S.R., U.S.S.R.

Specimens examined

Abbreviations: AMNH, American Museum of Natural History, New York; BMNH, British Museum (Natural History), London; FMNH, Field Museum of Natural History, Chicago; KU, Museum of Natural History, University of Kansas, Lawrence; MCZ, Museum of Comparative Zoology, Harvard University, Cambridge; MGU, Moscow State University, Moscow; MVZ, Museum of Vertebrate Zoology, University of California, Berkeley; UMZ, University of Montana Zoological Museum, Missoula; USNM, National Museum of Natural History, Washington; ZIN, Zoological Institute, Academy of Sciences, Leningrad.

Sorex roboratus roboratus. (51) U.S.S.R: R.S.F.S.R., Gorno-Altaisk Aut. Obl., Tapucha (USNM 175436, holotype); Kebezen'sk. rai. (MGU 73624, -27, -29, 74325, -28, -30, -40, -46, -48, -49, -52, -54 through -56, -62, -64, -65 -66, -70, -71, -73, -74, -76, -77, -79, -82, -85, -87, 77742, 82182) Altaisk. Krai, vic. Barnaul (ZIN 9173, holotype *S. araneus tomensis*). Novosibirsk. Obl., Togu-

- chinsk. rai., vic. Mirnyi (UMZ 13005); *Buryat-Mongolsk. Aut. Obl.*, 100 mi W Lake Baikal (BMNH 12.4.1.1, -2); *Irkutsk. Ob.*, Alzamai (BMNH 14.11.1.8); Listvyank (BMNH 15.3.9.1 through 9; 14.11.1.2 through 7).
- Sorex roboratus vir.* (52) U.S.S.R.: R.S.F.S.R., *Yakutsk. A.S.S.R.*, Nizhni Kolymsk (MCZ 15068, holotype; 15018, -23 through -31, -33 through -38, -40, -42 through -44, -46 through -51, -53 through -59, -64 through -66, -70 through -74, -82; AMNH 38880, -81; FMNH 34107 through -09; MVZ 81167); Suntar (MGU 4819, holotype *S. araneus jacutensis*); *Krasnoyarsk. Krai*, Turukhansk. rai., Artyugin R., trib. Yenesei (MGU 13455, holotype, *S. dukelskiae*); Yanov Stan, Turukhana R. (ZIN 10561, holotype, *S. vir turuchanensis*).
- Sorex roboratus thomasi.* (10) U.S.S.R.: R.S.F.S.R., *Buryat-Mongolsk. A.S.S.R.*, Budarman R., trib. Sosnovka R., vic. Barguzin (ZIN 11904, holotype); Sosnovka R. valley, vic. Barguzin (ZIN 11905, holotype, *S. aranoides*). MONGOLIAN PEOPLES REPUBLIC: *Tov Aymak*, 45 mi N Urga (=Ulan Bator) (AMNH 45573, -80, -81, -90; FMNH 39317, -18; MCZ 45588, -89).
- Sorex roboratus platycranius.* (3) U.S.S.R.: R.S.F.S.R., *Primorsk. Krai*, vic. Voroshilov (ZIN 2392, holotype); *Khabarovsk. Krai*, 60 mi N Khabarovsk, Nelta River (AMNH 85468, -69).
- Sorex araneus araneus.* (40) U.S.S.R.: R.S.F.S.R., *Zapadnaya (=Kalininsk.) Obl.*, Ostashkovsk. rai., Petropavlovsk (MCZ 32778 through -80); *Leningradsk. Obl.*, Valdansk. rai., Yakonova (MCZ 32781); *Novosibirsk Obl.*, Toguchinsk. rai., vic. Mirnyi (UMZ 13003, -04); *Altaisk. Krai*, near Barnaul (BMNH 28.10.24.1, -2; MCZ 23952, -53); *Gorno-Altaisk Aut. Obl.*, Tapucha (USNM 175437, -38); Kebezen'sk. rai. (MGU 73632, -35, -36, -39, 734185, -87, -88, -91 through -95, -97, 74204 through -13, -15, -18, -20, -24); Turochaksk. rai. (MGU 73671).
- Sorex tundrensis borealis.* (51) U.S.S.R.: R.S.F.S.R., *Koryaksk. Nats. Okr.*, Gichiga (AMNH) 18626, -27, -33, -37, -42, -49; *Yakutsk. A.S.S.R.*, Nizhni Kolymsk (AMNH 38884, -85; MCZ 14992, -95, -97 through -99, 15001, -02, -69, -76, -78 through -80, -84); *Chukotsk. Nats. Okr.*, Palyavaam River (MGU 88237, -44, -48, -50, -53, -58, -59, -63 through -65, -68, -69, -71 through -73, -77 through -79, -82, -85, -88, -89, -92, -96, -300, -01, -04, -05, -10, -11).
- Sorex tundrensis baikalensis.* (6) U.S.S.R.: R.S.F.S.R., *Chitinsk. Ob.*, Gornyi Zerentui (MGU 2710, holotype); *Primorsk. Krai*, Nadezhbinsk. Obl., Razdol'noe (KU 121366). MONGOLIAN PEOPLES REPUBLIC: *Tov Aymak*, 15 mi N Urga (=Ulan Bator) (AMNH 45595; MCZ 20744); 45 mi N Urga (FMNH 39312, -14).
- Sorex tundrensis petschorae.* (3) U.S.S.R.: R.S.F.S.R., *Arkhangel'sk. Obl.*, Pvimva (ZIN 8459, holotype); *Tyumensk. Obl.*, Purovsk. rai., Samburg (KU 121364-65).
- Sorex tundrensis schnitnikovi.* (7) U.S.S.R.: R.S.F.S.R., *Gorno-Altaisk. Aut. Obl.*, Tchegan-Burgazi (=Chagan-Burgazy) Pass (USNM 175429 through -31; MCZ 14373 through -75); Kazakh S.S.R., *Vostochno-Kazakhstansk. Obl.*, Kopal (ZIN 8641, holotype).
- Sorex tundrensis sibiricensis.* (12) U.S.S.R.: R.S.F.S.R., *Kemerovsk. Obl.*, Kol'chugino Sta., 4 km SE Leninsk- Kuznetskii (ZIN 6527, holotype); *Novosibirsk. Obl.*, vic. Novosibirsk (USNM 253025); *Krasnoyarsk. Krai*, Sev. Vostochnoe, 40 km SE Minussinsk (MGU 13452, holotype *S. jenissejensis*); "Yenesei region" (probably *Irkutsk. Obl.*, Alzamai) (BMNH 14.11.1.9 through -11);

"Irkutsk region" (probably *Irkutsk. Obl.*, Listvyanka) (BMNH 14.11.1.12, -13); *Buryat-Mongolsk. A.S.S.R.*, Sayan Mts., 100 mi W of Lake Baikal (BMNH 12.4.1.3. through -.5, -.6, holotype *S. centralis*).

Sorex isodon isodon. (28) U.S.S.R.: R.S.F.S.R., *Gorno-Altaisk. Aut. Obl.*, Turochaksk. rai. (MGU 73642, -47); Kebezen'sk. rai (MGU 73643 through -46, -51, -52, -56, -58, -61 through -65, -67, -72 through -79, -81, -82, -88); *Buryat-Mongolsk. A.S.S.R.*, Sosnovka River, [N of] Barguzin (MGU 13486, holotype).

Sorex caecutiens caecutiens. (12) U.S.S.R.: R.S.F.S.R., *Gorno-Altaisk. Aut. Obl.*, Biisk. rai. Ongudai (ZIN 6409, holotype, *S. c. altaicus*) Turochaksk. rai. (MGU 110062); Kebezen'sk. rai. (MGU 73999, 74000, -02, -05, -06, -08, -15, -55, -58); Tomsk. Obl., Listshchi River (UMZ 13009).

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